

Southern Border—Truck Cargo

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Background

The cargo population, or sampling universe, for AQI monitoring is defined as commercial plant perishable agricultural cargo. Random samples can be taken from this population with more intensive (hypergeometric) inspections completed and necessary data recorded about these commodities.

In order to properly monitor cargo, you need to have a good understanding of two key statistical principles:

1. It is important that the sample selected be representative of the commodity. Random selection helps ensure this.
2. Once the sample is selected, it is necessary to inspect the sample thoroughly and according to hypergeometric sampling procedures if applicable.

If you want your port to produce quality risk information, then each person participating must have a clear understanding of the sampling universe, the unit of sampling, and inspection consistency issues.

The Sampling Universe

You estimate the number of actions due to pests or smuggling in a cargo entry pathway by taking random samples from the cargo in the pathway. It is key to good statistics to carefully define this universe

from which you want to draw your random sample. The following questions need answers in order to select the sample correctly and to make statistical inferences for the entire universe.

- ◆ How are commodities transported?
- ◆ How many shipments of these commodities are arriving at a work location?
- ◆ What is the seasonality of the commodity?

For AQIM, the universe is defined by the mode of transport of the cargo such as truck. Initially, PPQ has decided to limit the universe. The following commodities or commodity types will be excluded from the sampling universe:

- ◆ Commodities which are pre-cleared at foreign sites
- ◆ Frozen commodities
- ◆ Commodities which undergo some type of mandatory treatment, other than cold treatment (for example, fumigation, irradiation, hot water treatment) at work locations
- ◆ Oil, salt, iron ore, coal, etc., which have no pest risk.

Cargo Strata and Stratifying the Sample

The sampling and inspection processes for AQIM were designed to be compatible with PPQ cargo inspection groupings. The cargo universe is divided into several homogeneous and distinctly separate groups. Each group contains commodities that will be sampled in order to estimate the action and pest approach rates in each group. A port may be sampling one or more of the commodities in a group or across groups. With Southern border cargo, the universe is the Commercial Plant Perishable Agricultural Cargo. This category is defined as any commercial formal or informal entry of fresh fruit, vegetables or other non processed or non refined plant product.

By sampling this category, PPQ is able to get precise estimates of the number of trucks with pests approaching or other needed actions. This risk information helps the work location understand how effectively it manages the pest risk for this category, as well as for the entire cargo universe at the port.

It's very important that each commodity in the category selected be representative of all other units of that category. All shipments of a category should have a chance of being selected as a sample. One way to ensure that the sample is representative is to choose a shipment of the commodity at random (either random time, or random number, etc.). This random selection process eliminates the bias of the officer

who is selecting the sample. The officer's experience (bias) might lead to choosing a shipment that is more likely to be harboring a pest. This bias would make the sample not representative of the entire commodity universe. The survey results would be skewed and this kind of bias would hamper the port's ability to make the best decisions based on risk analysis.

Setting Up a Process

Setting up a process of selecting representative samples for each of the commodities will be one of the biggest challenges in AQIM. Because each port has its own unique set of circumstances in cargo operations, the port must individualize its random sampling process. It will be necessary to document the process and possibly ask for feedback from other southern border ports, regional AQIM coordinators or Port Operations staff who have experience in selecting random samples in the cargo environment. The port may even decide that the Port Risk Management Team determine and review the random sampling process on a regular basis.

The Unit of Sampling

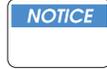
For Southern border cargo, the sample unit is the truck box containing the commodity, not including the cab. It is crucial that the sample unit is inspected closely enough to detect any actionable pests and any smuggling of prohibited agriculture commodities. Summary inspection procedures for border cargo begin on [page 10-5](#). The procedures must be followed exactly in order for the monitoring estimates to be valid and useful.

Consistency of Data Collection

It is crucial that the monitoring results from the inspection of a random sample unit are recorded accurately and consistently. Because each sample represents many other units, all officers must be as consistent as possible in following the inspection procedures.

Regulated commodities pose a special challenge. If the sample selected is a regulated commodity, it is important to understand the following:

Cargo monitoring estimates the number of trucks approaching the work location with commodity pest infestation levels requiring action by PPQ. AQIM uses risk-based inspection procedures for detecting a 10 percent or more pest infestation rate. This initial threshold is used to estimate the number of containers approaching a work location with a pest threat.



This 10 percent infestation level may change as the data for AQIM is collected and analyzed.

To be 95 percent sure that the officer inspecting the sampled truck will find the pest, when the shipment is infested at a 10 percent infestation or more level, the officer must select, at random, a specific number of boxes in the shipment. Determine this number of boxes by using the hypergeometric table illustrated in **Table 10-1**. Each of these boxes must be inspected at level of intensity to ensure that:

- ◆ No hitchhiker pests are present in the box
- ◆ No internal feeding insects are present in randomly selected fruit in the box.
- ◆ No mismanifested or smuggled items are present.

TABLE 10-1: Hypergeometric Table For Random Sampling In Commodity Inspection

Total Number of Boxes on Truck	Number of Boxes to Select at Random From the Truck and to inspect to Detect Pests
1-10	10
11-12	11
13	12
14-15	13
16-17	14
18-19	15
20-22	16
23-25	17
26-28	18
29-32	19
33-38	20
39-44	21
45-53	22
54-65	23
66-82	24
83-108	25
109-157	26
158-271	27
272-885	28
272-885	28
886-200,000	29

Officers should follow normal inspection procedures of the commodities to determine pests. For example, officers should cut fruit to detect internal feeders if external evidence is present.

Southern Border—Truck Cargo Procedures Summary

Use the following summary of procedures for Southern Border—Truck Cargo as an aid when sampling and inspecting commodities for AQIM. The summary is printed so you can remove, photocopy, and reuse it.

LAND-BORDER TRUCK CARGO AQIM PROCEURES	
Cargo Population Definition	<p>The following ports are conducting AQIM for Southern Border Truck Cargo: Brownsville, El Paso, Laredo, and Pharr, TX, Calexico and San Diego, CA, Nogales and San Luis, AZ.</p> <p>This does not include precleared and frozen commodities or commodities with mandatory treatments at port of entry.</p> <p>Note: Commodities with mandatory cold treatments are included.</p>
Sample Size	<p>Select six (6) trucks per week per port that receives this category of cargo. This excludes BCR (Border Cargo Release) and mandatory treatment cargo). Contact Regional AQIM Representatives for specific assistance.**</p>
Sample Selection	<p>Port discretion, random time, skip intervals, etc.</p> <p>May need to first determine the total number of shipments of a commodity received at a port in one year.</p> <p>If commodity is seasonal, then sampling should be planned to occur during the full import season of commodity, if reasonable for the number of samples needed.</p>
Inspection Methodology	<p>Each truck requires a physical inspection at port or consignee premise.</p> <p>Boxes for inspection must be taken from random locations throughout the truck to detect a 10 percent level of infestation (at 95% confidence). The number of boxes shall be set using Table 5-1. Entire contents of boxes selected and available floor space of the truck shall be inspected for agricultural pests or mismanifested or smuggled items.</p>
Other Issues	<p>Inspections shall be conducted during the normal business hours at the port. Costs for OT clearance will be paid by the shipper/broker/consignee, or government.</p> <p>Need to advise shippers, importers, and brokers that random sampling and inspection will be part of day-to-day operations. They should understand that there is a probability that their shipment will be intensely inspected.</p>
**Regional AQIM Representatives	<p>Western Region - Judy Pasek: 970-494-2523</p> <p>Eastern Region - Mikell Tanner: 919-855-7317</p>

Pathway Monitoring Maintenance

Port managers and local AQIM coordinators are responsible for ensuring that monitoring activities are being performed and performed properly. To help with reviewing the status of monitoring

activities, refer to **Appendix L** Pathway Monitoring Maintenance in the AQIM Handbook. This appendix contains a checklist of questions port managers and local AQIM coordinators should periodically answer to ensure proper monitoring of each designated pathway at their work locations. **See Figure E-1.** The questions review the following topics:

- ◆ Random sampling
- ◆ Proportional sampling
- ◆ Adequate sampling
- ◆ Accurate and complete data
- ◆ Working risk committees
- ◆ Local support

Southern Border—Truck Cargo Worksheet

There is one worksheet for recording information gathered from your inspection of Southern Border cargo for the purpose of AQIM. Be sure to record the commodity being inspected properly.

The form is also available as a fillable form; go to:

http://www.aphis.usda.gov/ppq/manuals/port/pdf_files/AQIM_in_PDF/Southern_Border_Cargo.pdf

Agriculture Quarantine Activity Systems (AQAS) User Guide for Data Entry

The data collected must be entered into the AQAS database. This is a web-based program and is accessible from any USDA APHIS or DHS CBP computer. The web address is:

<https://mokcs14.aphis.usda.gov/aqas/login.jsp>

A user name and password is required to enter and access the data. These can be obtained by contacting your immediate supervisor.

Survey Results and How To Use Them

AQIM activities have been put into place to develop baseline data to help answer two basic questions:

1. What is the threat of agricultural pests approaching work locations?
2. How effective is the AQI program at managing this threat?

There are varying rates at which prohibited agricultural materials and pests approach the work locations. These prohibited agricultural materials are what can have agricultural pests.

Further analysis of the monitoring data is needed to determine the risk associated with the prohibited items approaching the work location. The origin and destination of the prohibited items is important to determine risk levels. Also, whether or not the prohibited item carries an actual agricultural pest is crucial in analyzing risk.

Analyses of the monitoring data need to occur at several levels of PPQ. At the work locations, PPQ personnel need to study what the data means and answer the first question for their specific work location. Analysis tools are available to help with these analyses, which are explained in the next subsection. At the same time, PPQ holds risk analysis workshops around the country to introduce risk analysis concepts. At some work locations, teams of PPQ officers and managers form Risk Management Teams to look at monitoring data and other data, which are normally collected at the work location.

At other locations, analyses of monitoring data occur to establish the rates at which quarantined items and agricultural pests are approaching the borders of States, areas of the country, and the United States.

Once baseline rates are well established, PPQ can use the monitoring data as a baseline to answer the second basic question: How effective is the AQI program at managing the risk of introduction of agricultural pests and diseases? Again, each work location must conduct this type of analysis. AQIM provides a framework which work location can use to carry out the analysis.

Questions To Guide Data Analysis

1. How many trucks were selected for sampling during the survey period?

How many actions were required on the trucks sampled?

How many actions by strata category sampled were there?
(Previous data has multiple strata.)

What is the action approach rate of trucks that require action
(number of trucks requiring action divided by total trucks in the sample)?

2. How many pest interceptions (actionable pests) were made from survey samples?

Pest Approach Rate: What is the rate of pest interceptions in relation to the total sampled number of trucks (number of trucks with actionable pests divided by total trucks in the sample)?

3. Compare the rate of actions required for each month of the survey.

DISCUSSION:

Are there easily identified trends when the rate of cargo actions transiting the work location are higher?

Are there seasonal trends?

Do higher rates correlate with national or religious holidays, certain types of trucks, cargo, or importers?

4. Generate a listing and frequency of shipments requiring action. Which commodities present the greater risk?

Which commodities most likely to require action? Where were the agricultural pests found? What is the rate of trucks with smuggled or mismanifested items?

DISCUSSION:

How effective is the current tailgate inspection process in detecting pests and/or smuggled cargo?

5. What types of shipments (refrigerated, mixed vegetables, dry containers, empties, cut flowers, express carriers, etc.) require higher rates of action?

DISCUSSION:

What selectivity factors are currently used to identify shipments likely to require action?

What additional selectivity factors would be used to identify shipments likely to require action?

Do the survey results indicate additional factors that help identify shipments most likely to require action?

6. Using monitoring data, apply the survey results to the cargo universe at the work location to estimate the number of actions required and interceptions likely to transit the work location during the same time the survey period took place.

How many trucks arrived at the work location during the survey period? Using the action approach rate for trucks requiring action, calculate an estimate of the number of trucks transiting the work location that are likely to require action.

Using WADS data, how does the estimated number of actions required compare with the reported number of actions taken?

How many additional actions may have been required during the survey period?

How does the estimated number of actionable pest interceptions compare with the reported number of actionable pests on WADS for truck cargo?

DISCUSSION:

What percentage of resources are dedicated to staffing AQI activities for southern border truck cargo at the work location?

What is the relative risk of this pathway compared with other pathways in the work location?

Should resources be reallocated among all the pathways in the work location to better address the relative risk of the pathways?

